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Assessing the Risk of Intimate Partner Violence in the Chinese Population: The Chinese Risk Assessment Tool for Perpetrator (CRAT-P)

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Abstract

The study undertook the development and validation of a risk assessment tool for the evaluation of risk of intimate partner violence (IPV) among the Chinese population. A total of 2,225 men from a representative Chinese population in Hong Kong were assessed with their experience of IPV perpetration in the year preceding the interview. With the use of the split-half validation procedure, six factors that were associated with IPV perpetration were selected. The area under the receiver operating characteristic curve (AUC) was 0.76. The Chinese Risk Assessment Tool for Perpetrators (CRAT-P) is a brief and easy to use assessment tool for evaluating IPV risk in the Chinese population.

Keywords

Chinese, intimate partner violence, perpetrator, risk assessment tool

Intimate partner violence (IPV) may take different forms such as physical, emotional, sexual, or threats of such violence committed by one partner against another in an intimate and/or dating relationship (Krug, Dahlberg, Mercy, Zwi, & Lozano, 2002). Previous research has demonstrated that IPV may lead to various negative health effects on victims, including physical injuries and psychological distress (Campbell & Soeken, 1999; Leserman, Li, Drossman, & Hu, 1998; Lindhorst & Oxford, 2008; Yoshihama, Horrocks, & Kamano, 2009). These potentially harmful effects on victims, together with the high prevalence rate across countries, have made IPV a

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worldwide health concern and attracted increasing attention over the past few decades (Garcia-Moreno, Jansen, Watts, Ellsberg, & Heise, 2005; Heise, Elsberg, & Gottemoeller, 1999; Krug et al., 2002).

Risk Factors for IPV

Attempts have been made by different researchers to identify risk factors associated with IPV, including relationship distress (Margolin, John, & Foo, 1998; Stuart & Holtzworth-Munroe, 2005; Sugarman, Aldarondo, & Boney-McCoy, 1996; Vives-Cases, Gil-Gonzalez, & Carrasco-Portino, 2009), wife pregnancy (Burch & Gallup, 2004; Gazmararian et al., 2000; Richardson et al., 2002), in-law conflict (Chan et al., 2009; Clark, Silverman, Shahrouri, Everson-Rose, & Groce, 2010), stresses (Cascardi & Vivian, 1995; Gelles, 1993; Neff, Holamon, & Schluter, 1995), substance abuse (Caetano, McGrath, Ramisetty-Mikler, & Field, 2005; Coker, Smith, McKeown, & King, 2000; Fals-Stewart, Golden, & Schumacher, 2003; Golinelli, Longshore, & Wenzel, 2009; Sharps, Campbell, Campbell, Gary, & Webster, 2001), jealousy (Buss, 2000; Dobash, Dobash, Wilson, & Daly, 1992; T. Wang, Parish, Laumann, & Luo, 2009), anger management skills (Barbour, Eckhardt, Davison, & Kassinove, 1998; Heru, Stuart, & Recupero, 2007), violence approval (Hien & Ruglass, 2009; Sugarman et al., 1996), dominance and low self-esteem (Kim & Emery, 2003; Straus, 2008; Vives-Cases et al., 2009), negative attribution (Schumacher, Feldbau-Kohn, Smith Slep, & Heyman, 2001; Straus et al., 1999), depressive symptoms (Fletcher, 2010; Kim & Emery, 2003; Straus, 2008; Vives-Cases et al., 2009), criminal history (Moffitt, Krueger, Avshalom, & Fagen, 2000; Ramirez, 2005), and experience of witnessing parents' IPV during childhood (Yoshihama et al., 2009).

Social desirability is another factor that has great influence on IPV prevalence as it may affect an individual's willingness to report the occurrence of violence (Arias & Beach, 1987; Rosenbaum & Langhinrichsen-Rohling, 2006). Arias and Beach (1987) have discovered a negative association between social desirability and the willingness to report physical violence perpetration. That is, respondents who have a high level of social desirability tend to have a stronger desire to be viewed positively and are more likely to underreport IPV incidents, which are socially undesirable. The tendency of underreporting in general may be even greater when information was collected via in-person interviews, because face-to-face reporting of socially undesirable IPV behaviors may evoke feelings of shame, guilt, and embarrassment. These feelings may lower the likelihood of disclosure of such violence.

In Chinese society, the concept of "face" may be one of the unique cultural values that play a significant role in IPV (Carr, 1993; Hu, 1944). According to Carr (1993), "face" can be translated as "prestige; dignity; honor; respect; status" (p. 90) that can be gained or lost through interaction with others. Face often acts as both a guideline for social behaviors and a product of social processes (Eberhard, 1967; King & Myers, 1977) and has been regarded as a useful construct for understanding social interaction among Chinese people (Ho, 1976). Within a couple, some interactions may lead to the

feeling of "losing face" (e.g., compliance or respect from the other partner is reduced). When face is "lost," anger and shame may be provoked which, in turn, may lead to the perpetration of IPV (Chan, 2006).

Predicting IPV Based on Risk Factors

There has been a growing interest in the prediction of future violence or recidivism of violence in intimate relationships (Bennett Cattaneo, 2007). Various types of assessments have been developed to facilitate the communication and management of IPV risks among professionals, perpetrators, and victims. Clinical assessment, which is probably the most common approach to assess IPV risks (Campbell, Sharps, & Glass, 2001; Dutton & Kropp, 2000), usually relies on the qualifications and experience of the professional to make an appropriate judgment of the risk level. In comparison, actuarial assessment, which is often developed using statistical methods, aims at predicting the IPV risks in both the relative and absolute sense, by comparing the perpetrator or the victim with a norm-based reference group and providing a reliable estimate of the probability of future violence (Kropp, 2004). Perpetrators, victims, or sometimes professionals with brief limited training respond to each item in the assessment tool and a total score is obtained by summing the individually weighted item scores. Professionals then determine the level of IPV risk according to an objective guide with the risk categories separated by different cutoff scores without the need for professional discretion. Supporters of this actuarial approach argue that the shift of subjective professional judgment to a more objective form of decision making, which is primarily based on the self-report of perpetrators and victims, enhances the predictive accuracy (Buchanan, 2008; Dawes, Faust, & Meehl, 1989). However, the structured professional approach integrates professional judgment and rational decision making. Risk assessment tools utilizing this approach often serve as a systematic but highly flexible checklist of risk factors for IPV. Professionals, instead of the perpetrators or victims of IPV, use their experience and training to rate or score each risk factor, decide which factors are more important and therefore are having a greater item weight in the individual case, and then determine the degree of risk based on the weighted ratings of the checklist. Examples of existing actuarial assessment tool include the revised Danger Assessment (DA; Campbell, Webster, & Glass, 2009), the Spousal Assault Risk Assessment Guide (SARA; Kropp, Hart, Webster, & Eaves, 1995, 1999), the Ontario Domestic Assault Risk Assessment (ODARA; Hilton et al., 2004), and the Domestic Violence Screening Inventory (DVSI; Williams & Houghton, 2004).

The Present Study

The major goal of the present study was to develop and validate an IPV risk assessment tool, which was named the Chinese Risk Assessment Tool for Perpetrators (CRAT-P), from a pool of potential risk factors covering information

of both the perpetrators and victims of IPV within a general population. The present study undertook the development of this instrument with a representative sample of Chinese households in Hong Kong, intending to obtain a reliable and validated assessment tool for evaluating IPV risk in the Chinese population. The CRAT-P would be different from existing risk assessment tools, which mainly predict IPV risk with past violence experience, by the inclusion of personal, family, and cultural risk factors to evaluate future IPV risk. At present, almost all IPV risk assessment tools evaluate one's risk of future IPV recidivism by assessing one's IPV experience in the past (Campbell et al., 2009; Hilton et al., 2004; Kropp et al., 1995, 1999; Williams & Houghton, 2004). The CRAT-P was designed to retrieve information other than one's history of IPV perpetration to assess IPV risk. This makes the CRAT-P a less sensitive instrument that may be effective in avoiding underreporting caused by social desirability.

Method

Sample

Data were drawn from a representative population study carried out in Hong Kong in 2004. Valid quarters were randomly sampled from the Register of Quarters maintained by the Census and Statistics Department of the Government of Hong Kong. This was the most up-to-date and complete sampling frame available in Hong Kong. A stratified sample design was adopted, with the records in the Register of Quarters stratified by geographical area. Selection of sampling units using a systematic replicate sampling technique was used with fixed sampling intervals and non-repetitive random numbers. The use of replicated sampling facilitated the calculation of sampling errors and ensured that the required effective sample size would be met by adjusting the number of replicates used. A total of 5,049 adult participants were interviewed individually, representing a response rate of 70%. Non-participation encompassed both refusals to respond (20%) and a failure to contact potential participants (10%). All family members who met the study criteria during the study period were invited to participate. Eligible participants for the study were Chinese, were aged 16 or above, gave their written informed consent, were married or cohabitated, with or without children, and were Cantonese, Putonghua, or English-speaking. The couples in the same households were interviewed face-to-face individually by interviewers who were trained to conduct household research interviews. The procedures were approved by the ethics committee of the University of Hong Kong.

The data used in this analysis were a sub-sample from the household survey. All male participants with complete self-reports were selected, making it a sample of 2,225 records of Chinese men.

Measures

History of IPV perpetration. The Revised Conflict Tactics Scale (CTS2) was used to measure the prevalence of violence in terms of lifetime and preceding year. The CTS2 covers five aspects of spousal conflict: negotiation, physical assault, psychological aggression, physical injury, and sexual violence, with both satisfactory psychometric characteristics (Straus, Hamby, Boney-McCoy, & Sugarman, 1996) and high cross-cultural reliability (Straus, 2004). The internal consistency reliability of the CTS2 scales is generally high, with an alpha coefficient ranging from .79 to .95 (Straus et al., 1996). In terms of criterion validity, an increasing severity of tactics has been shown to correlate with the likelihood of increasing severity of injury (Coben, Forjuoh, & Gondolf, 1999). The CTS2 was translated into Chinese by the first author and validated using Hong Kong data (Chan, 2004). In this study, the Chinese translation of the CTS2 showed satisfactory reliability (α ranging from .88 to .96).

The subscales of physical assault and sexual violence were used in this study. Participants were asked whether they had perpetrated physical and/or sexual IPV in the year preceding the time that the interview was conducted. Any reported experience of physical and/or sexual IPV perpetration would be coded positive for the variable "IPV perpetration."

Personal and Relationship Profile (PRP). The PRP, developed by Straus and colleagues (Straus et al., 1999), is a self-report measure for clinical screening and research on family violence. PRP items are theoretically related to the etiology of IPV by measuring individual and relationship factors on 21 subscale items. Participants rate their agreement with each item on a scale of 1 (*strongly disagree*) to 4 (*strongly agree*), and items are summed to create subscale scores. Eleven PRP subscales were selected in the present study, and all items were translated and back translated into Chinese. Brief descriptions and the internal consistency reliability coefficients of the selected PRP subscales are shown in Table 1.

In-law conflict. One question was used to measure the frequency of in-law conflict. The participants at the interview were asked the number of incidents of conflict with parents-in-law in the previous 12 months. The responses included *never, once, twice, 3 to 5 times, 6 to 10 times, 11 to 20 times, 20 times or more,* and *none in the past 12 months, but it has happened before*.

Childhood-witnessed parental violence. Participants were asked whether they had witnessed physical assault, psychological aggression, or inflicted injuries between their parents during their childhood. All items of the physical assault, psychological aggression, and injury scales of the CTS2 were listed for their reference. Participants who reported any of the violent acts between their parents were coded as having witnessed parental IPV.

Table 1. Descriptions and Reliability Coefficients of the Selected Subscales of the Personal and Relationship Profile (PRP).

PRP subscales	Items	Alpha	Brief description
Relationship distress	8	.78	Areas of dissatisfaction with the relationship, characterized by high conflict and few positive interactions
Domination	9	.88	Dominance describes relationships that are hierarchical and in which the person with greater advantage uses that advantage to gain status, privilege, or control over his or her partner
Jealousy	8	.91	Extreme concern about the possible sexual and social exclusiveness of the current partner
Negative attribution	4	.72	Blame/negative intentions attributed to partner of respondent
Anger management	6	.43	Recognizing signs of anger, self-talk, and behavioral self-soothing
Violence approval	9	.80	The extent to which use of physical force is acceptable in a variety of interpersonal situations
Depressive symptoms	8	.69	Disturbances in mood, dysphoric cognition, and somatic disturbances
Social desirability	13	.62	The degree to which a respondent will tend to avoid admitting undesirable behavior, such as partner assault and other forms of crime
Stressful conditions	8	.79	Stress or hassles experienced in daily living
Substance abuse	7	.94	Excessive use of alcohol or other mind-altering drugs
Alcohol abuse	3	.87	
Drug abuse	4	.97	

Face. The Acquisitive Face Orientation Scale is a locally validated 10-item self-reporting scale used to measure the concept of Chinese "face" in terms of the potential of an individual to highly value prestige, success, and others' respect. The higher the score of the scale, the higher the importance of the face orientation on one's cognitions and behaviors. The reliability of the subscales was found to be satisfactory, with a Cronbach's alpha of .70 (H. Wang, 2002). The participants were asked in the survey to indicate whether they agree or disagree that a statement described them, using the following response categories: *strongly disagree*, *disagree*, *agree*, and *strongly agree*. The 10 statements include *strengths be presented to others*; *happy with people's attention or admiration*; *like grand houses, offices, or cars*; *success known to people*; *be the person who is*

admired by others; *to be a celebrity*; *being supported and respected*; *honor family and ancestors*; *admire prestigious, powerful, or high status people*; and *seize opportunity to be a leader*. The internal consistency reliability of the face scale in this study was .91.

Self-esteem. To measure the self-esteem of the participants, the Rosenberg Self-Esteem Scale (Rosenberg, 1965), which is a 10-item Likert-type scale with items answered on a 4-point scale ranging from *strongly agree* to *strongly disagree*, was used. The scores for the 10 items are then summed; the higher the score, the higher the participant's self-esteem. The internal consistency reliability of the self-esteem scale in this study was .70.

Demographic characteristics. The demographic and socioeconomic characteristics of the participants, including their age, education level, work status and income, indebtedness (whether they were in debt), whether they had chronic illness, whether they had any disability, whether their partner was pregnant, whether they were new immigrants to Hong Kong, and whether they were receiving social security, were recorded.

Statistical Analyses

To develop a validated risk assessment tool, the split-half validation procedure was used to cross-examine the accuracy of the newly developed instrument. The sample was split randomly in two: one for identification of significant associated factors for IPV perpetration, the other for cross-validation. With the first half of the sample, separate univariate logistic regression analyses were used to find out the odds ratios (ORs) for the association between the experience of IPV perpetration and individual risk factors. All significantly associated factors were included in the subsequent multivariate stepwise backward logistic regression analysis, which would give the best set of predictors for IPV perpetration. This set of factors was then validated with the second half of the sample, and the sensitivity, specificity, and overall accuracy obtained for further comparison. In the present study, no interaction analyses are included.

To determine the optimal cutoff point, the rates of true positive, true negative, false positive, and false negative at different cutoff scores of the assessment tool were calculated. Because the problem arising from a false negative (i.e., the failure to detect a violent case) is serious, I adopted the approach that determines the optimal cutoff at which the ratio of false positive to false negative is greater than or equal to 10:1 (Berk, Kriegler, & Baek, 2006; Snider, Webster, O'Sullivan, & Campbell, 2009).

A Receiver Operating Characteristic (ROC) curve was compiled. The ROC curve is a graph plotting sensitivity against 1-specificity, and thus, a graphical representation of the trade-off is made possible between the positive and negative predictive values at every possible cutoff. The accuracy of assessment tools is

usually measured by the area under the receiver operating characteristic curve (AUC). The AUC ranges from 0.50 to 1, and a higher value indicates a greater effectiveness of the assessment tool. In the present study, all statistical analyses were done with SPSS 17.

Table 2. Demographic Characteristics and Preceding-Year Prevalence of IPV Perpetration of the Two Randomly Split Samples.

	Percentage	
Characteristic	First half (*n* = 1,111)	Second half (*n* = 1,114)
Age group		
18-25	0.7	0.7
26-35	11.5	12.3
36-45	30.2	29.7
46-55	25.7	30.3
56-65	16.3	12.9
66 or above	15.6	14.0
Chronic illness	18.1	16.4
Wife's pregnancy/adoption/postnatal	3.5	2.9
Receiving social security	8.0	5.9
New arrival	1.1	1.9
Indebtedness	5.6	6.4
In-law conflict	3.8	3.3
Unemployed	6.9	6.6
Income group[a]		
No income	26.9	25.4
$4,999 or below	8.0	7.5
$5,000 or above	65.1	67.1
Disability	1.3	1.3
Alcohol abuse	12.1	11.6
Drug abuse	2.2	2.5
Preceding-year IPV perpetration		
Physical	5.3	5.8
Sexual	4.9	3.3

Note. IPV = intimate partner violence.
[a]In Hong Kong dollars (HKD). 1 HKD = US$0.128.

Results

Sample Characteristics and IPV Victimization

Table 2 shows a summary of the demographic characteristics and the preceding-year prevalence of IPV perpetration of the two split samples. In the present study, the preceding-year prevalence of physical and sexual IPV perpetration was 5.3% to 5.8% and 3.3% to 4.9%, respectively, which fell into the range of 1.1% to 54.0% as found in past research (Garcia-Moreno, Jansen, Ellsberg, Heise, & Watts, 2006; Zorrilla et al., 2010). No significant difference was found in the demographic profile as well as the IPV prevalence rates between the two randomly split samples (all *p*s > .05).

Selecting Factors for the CRAT-P

A series of logistic regression analyses, each using a single risk factor as the predictor and the presence of preceding-year IPV perpetration as the dependent variable, were performed to identify risk factors with significant OR. Table 3 shows the ORs of all risk factors. All the 17 risk factors were found to have significant ORs (all *p*s < .05).

Table 3. Odds Ratios (ORs) of the Risk Factors as Found With Univariate Logistic Regression Analyses (*n* = 1,111).

Risk factor	Variable type	Crude OR	95% CI
Family factor			
Wife pregnancy	Categorical	2.39*	[1.03, 5.57]
In-law conflict	Ordinal	4.16***	[2.01, 8.59]
Relationship distress	Interval	2.54**	[1.32, 4.91]
Personal factor			
Substance abuse			
Alcohol abuse	Interval	2.95***	[1.79, 4.86]
Drug abuse	Interval	8.14***	[3.51, 18.87]
Domination	Interval	5.18***	[2.56, 10.46]
Jealousy	Interval	2.55***	[1.60, 4.09]
Negative attribution	Interval	3.36***	[1.84, 6.14]
Anger management	Interval	0.41**	[0.22, 0.76]
Violence approval	Interval	3.21***	[1.63, 6.31]
Depressive symptoms	Interval	2.34*	[1.21, 4.51]
Social desirability	Interval	0.14***	[0.06, 0.35]
Stressful conditions	Interval	3.30**	[1.60, 6.84]
Face	Interval	2.51***	[1.58, 3.98]
Self-esteem	Interval	0.45*	[0.20, 1.00]
Criminal history	Categorical	7.77***	[4.60, 13.13]
Child witnessed parental violence	Categorical	6.87***	[3.50, 13.48]

Note. Dependent variable = Presence of preceding-year IPV (physical or sexual) as measured by CTS2. IPV = intimate partner violence; CTS2 = Conflict Tactics Scale; CI = confidence interval.
*p < .05. **p < .01. ***p < .001.

The 17 significant risk factors were included in a multivariate stepwise logistic regression analysis, and the resulting model is shown in Table 4. Before the regression analysis was performed, multicollinearity was checked among all risk factors to ensure they were not highly intercorrelated. All variance inflation factors (VIFs), which measure how much the variance of a coefficient is increased because of collinearity, were smaller than 2, which were lower than the generally accepted tolerance level of 10 (O'Brien, 2007). Therefore, no multicollinearity problem was identified in the present study.

The final model yielded a non-significant result in the Hosmer–Lemeshow test (χ^2 = 9.38, p = .31), indicating an overall goodness-of-fit of the model for explaining the present data. Six factors were found to be significantly associated

factors in the final regression model, including *in-law conflict*, *domination*, *social desirability*, *face*, *criminal history*, and *experience of witnessing parental violence during childhood* (all *p*s < .05; Nagelkerke R^2 = .19), and were used to form the CRAT-P.

Table 4. The Final Multivariate Stepwise Logistic Regression Model (*n* = 1,111).

Risk factor	*B*	*SE*	Wald χ^2 (*df* = 1)	Odds ratio [95% CI]	Model LL	Change in –2LL
In-law conflict	0.97	0.46	4.56	2.64 [1.08, 6.46]*	–262.69	4.03
Domination	0.99	0.41	5.76	2.69 [1.20, 6.03]*	–263.57	5.80
Social desirability	–1.13	0.52	4.82	0.32 [0.12, 0.89]*	–263.07	4.80
Face	0.65	0.28	5.55	1.92 [1.12, 3.32]*	–263.43	5.52
Criminal history	1.85	0.30	38.90	6.33 [3.55, 11.32]***	–277.61	33.89
Child witnessed parental violence	1.34	0.44	9.40	3.81 [1.62, 8.95]**	–264.82	8.30
Constant	–3.58	1.91	3.50	0.03	—	—

Note. Dependent variable = presence of preceding-year IPV (physical or sexual) as measured by CTS2. Nagelkerke R^2 of the final model = .19. IPV = intimate partner violence; CTS2 = Conflict Tactics Scale; CI = confidence interval; LL = log likelihood.
*p < .05. **p < .01. ***p < .001.

Determination of the Optimal Cutoff Score

The point where sensitivity and specificity met was used as the optimal cutoff score for the CRAT-P. In this case, the optimal cutoff was found to be 7%. At this cutoff, the rate of false positives was 29.8%, while that of false negatives was 2.7%, giving a ratio of about 10:1, which fit the criterion set by previous studies (Berk et al., 2006; Snider et al., 2009). The sensitivity was found to be 69.2%, whereas the specificity was 67.3%. The positive predictive value, which is the percentage of correct predicted occurrence of the binary outcome of any IPV and the negative predictive value, which is the correct prediction of non-occurrence, were found to be 17.0% and 96.3%, correspondingly. The overall accuracy for the correct prediction of both occurrence and non-occurrence was 67.4%.

Validation of the CRAT-P

The six-factor CRAT-P was validated with the second half of the randomly split sample. Results showed that the rates of true positives, true negatives, false positives, and false negatives were 4.7%, 59.3%, 33.0%, and 2.9%, respectively. The sensitivity and specificity of the CRAT-P with the second half of the sample were 61.0% and 64.2%, respectively, and the CRAT-P had a positive predictive value of 12.4%, a negative predictive value of 95.3%, and an overall accuracy of 64.0%.

A maximum likelihood estimate of the ROC using the second half of the sample was also obtained. The AUC with the present data was 0.76 (95% confidence interval [CI] [0.70, 0.81]), which was significantly greater than 0.50 under the 45-degree reference line ($p < .001$).

Discussion

The present study developed a six-factor assessment tool—the CRAT-P—to evaluate the risk of a man in the Chinese population assaulting his female partner. Findings from the present data revealed the acceptable scores for the indicators such as sensitivities, specificities, and overall accuracies of the CRAT-P when applied to the representative population sample. When examined with the split-half validation procedure, the CRAT-P still achieved fair levels for the instrument indicators. Furthermore, the AUC of the CRAT-P with the present sample was 0.76, which was comparable with those of other existing risk assessment tools for violent recidivism, with the AUC ranging from 0.57 to 0.80 (Harris, Rice, & Cormier, 2002; Heckert & Gondolf, 2004; Hilton, Harris, Rice, Houghton, & Eke, 2008; Hilton et al., 2004; Williams & Houghton, 2004).

Assessing IPV Risk Among the General Population

The present study was among the first to incorporate a large, representative sample of the general population to develop highly representative risk assessment tools for the evaluation of IPV risk in Chinese society. Most existing risk assessment tools, including the SARA and ODARA, aim at predicting the tendency of violent recidivism among known IPV perpetrators who have disclosed their previous IPV acts (Hilton et al., 2004; Kropp et al., 1995, 1999; Williams & Houghton, 2004). While these tools are useful for addressing the demands for valid strategies to classify IPV cases and determine the risk of recidivism (Campbell et al., 2009; Crowell & Burgess, 1996; Kropp, 2008), the need for a reliable but less sensitive instrument to assess risk of IPV among the general population should not be overlooked.

Developed with the use of IPV risk factors other than one's past history of IPV as associated factors, the CRAT-P may be an effective assessment tool for service providers in various settings, especially social services, to evaluate the risk of IPV among individuals who are or are not willing to disclose their past IPV perpetration experience. In particular, the CRAT-P evaluates the risk of IPV perpetration by assessing one's personality traits and past experience of in-law conflict and parental violence during childhood. This facilitates the risk assessment in cases with no previous IPV experience. Furthermore, the instrument was developed using a representative sample; it may be applied to adult Chinese for risk assessment.

Consistent with previous research, the present study resulted in a simple actuarial IPV risk assessment that can be used by frontline service providers without extensive knowledge of statistics and training for scoring and rating (Campbell et al., 2009;

Hilton et al., 2004). Obtaining the information required in our instrument (e.g., "face" and domination levels) does not require intensive professional training like other assessment tools usually do. With the use of self-reporting, the probability of any biased decisions made by professional judgment in the rating procedures may be minimized (Dawes et al., 1989). In addition, the CRAT-P is an assessment tool of reasonable length. On average, it takes around 15 min to complete. As a result, the time and financial costs incurred by professional risk assessment may be reduced.

Limitations

The present study possesses certain limitations that need to be addressed in future research. Although the impact of bias in reporting was reduced by comparing the self-report prevalence between matched couples, which found no gender difference in the reporting of IPV against women in the present study, we cannot reject the possibility of underreporting of IPV in the data. This is especially true when the present study used face-to-face interviews, which may lead to a decreased willingness to disclose sensitive issues. Future studies may reduce inaccurate reporting by including various sources of data such as criminal records and observation by professionals, or by using computer-based procedures that have been found to improve the detection of violence (Ahmad et al., 2009). Prospective tracking of IPV incidents was infeasible in the present study because the limited resources did not allow the tracking of the large sample size. Future research may consider the use of longitudinal prospective design so that any IPV incidents and relevant data after the assessment and prediction can be tracked and used to validate the assessment tool.

Our findings may be interpreted as the higher the social desirability, the lower the report of IPV by the respondent; however, it is possible that perpetrators with high social desirability had not disclosed their violence and were therefore undetected in our study. Although this can be difficult to control for, future studies may conduct careful screening to identify potential perpetrators. One of the important and facilitative factors for perpetrators to disclose their violence is the use of a therapeutic context during the interview (Chan, 2009).

The present study only used static linear predictive relationships and did not include any interactions in the prediction of IPV. Previous findings have demonstrated potential interaction effects among the variables, for example, between age and psychopathy (Harris, Rice, & Cormier, 1991) and among stress, past partner abuse, and diathesis in youth (Sommer, Barnes, & Murray, 1992). However, the present study did not include any interactive variable in the analyses. Future research may incorporate possible interactive variables into the statistical prediction and test whether the inclusion of interaction effects would improve the accuracy of the instrument.

Conclusion

The present study provides a further piece in the emerging body of evidence that supports the power of empirical methods in developing assessment tools for evaluating violence risk (Harris et al., 2002; Monahan, 1996; Williams & Grant, 2006). The items selected following the empirical methods used in the present study could identify IPV perpetrators from non-perpetrators, and the CRAT-P developed was both systematic and easy to use. Although it has been argued that actuarial assessments generally have the shortcoming of inflexibility for context-specific judgments (Kropp, 2004, 2008), the present study provides evidence that the actuarial IPV risk assessment may provide a certain benefit by offering a simple but effective instrument for the evaluation of IPV risk without adding extra economic burden to service providers.

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